Exhibit 11

RACHEL S. DOUGHTY (Cal. Bar No. 255904)
GREENFIRE LAW, PC
P.O. Box 8055
Berkeley, CA 94707
Telephone: 510-900-9502
Email: rdoughty@greenfirelaw.com

Attorneys for the Story of Stuff Project

BEFORE THE STATE WATER RESOURCE CONTROL BOARD, OFFICE OF ADMINISTRATIVE HEARINGS

STATE OF CALIFORNIA

In the Matter of: DRAFT CEASE AND DESIST ORDER ISSUES AGAINST BLUETRITON BRANDS, INC.	VV: INV 8217 **SUR-SUR REBUTTAL TESTIMONY OF GREGORY ALLORD (SOS 288)**

I, Gregory Allord, declare as follows:

The facts set forth in this declaration are based on my personal knowledge, and if called as a witness, I could and would competently testify thereto under oath.

1. My career as a Cartographer began using traditional photomechanical techniques, transitioned through the early implementation of computer-assisted mapping and fully realized GIS and digital publishing and cartographic processes were the norm when I retired. I participated in numerous projects as a cartographer, cartographic specialist, project and program manager during all three phases. These included multi-volume nationwide scientific reports, proof-of-concept of GIS and the scanning and georeferencing the entire collection of historical USGS topographic maps. As a result, I have personal or professional knowledge or experience with the multiple generations of the maps and methods referenced in BTB 38. SOS 289 is a true and correct copy of my CV and publication list.

2. I offer in this declaration a rebuttal of the Written Surrebuttal Testimony of Mark Nicolls (BTB 38), the map comparison images in BTB 39, and Mr. Nicholls' oral testimony on 4/25/22.

3. Mr. Nicholls testified that the depiction of water features in the upper Strawberry Canyon on a 1905 USGS subject matter map (SOS 091, "Plate 12") are "imprecise," and that it can be inferred that features on this map, other than irrigation features, were drawn without "attention to detail" and are therefore unlikely to be reliable. (BTB-38, pp 1-2, including footnotes).

4. Plate 12 was created using two existing USGS 15', 1:62,500 topographic quadrangles—Redlands and San Bernardino (1901)--as base maps (the "Base Maps") and the report was compiled and written by a third scientific team, led by W.C. Mendenhall and J.B. Lippincott, who used the two topographic maps for field work. **In my opinion this was standard operating procedure of using topographic quadrangles as base maps was implemented in the very early years of the USGS.** It is further described in SOS 301, which is a true and correct copy of an article describing the historical production of USGS topographic maps, which I downloaded in May 2022 from the American Library Association's website, as well as contemporaneously in SOS 297_005 (authenticated below). SOS 290 and SOS 291 are true and correct copies of the Base Maps, downloaded from USGS's TopoView in April 2022.

5. SOS 292 is a true and correct copy of USGS fact sheet: *History of U.S. Geological Survey Scientific Peer Review and Approval, 1879-2019*, downloaded from the USGS in May 2022**. In my opinion it accurately describes the rigorous scientific review that the USGS has employed in its publications since 1879.** John Wesley Powell in 1884 and 1885, as the second Director of the USGS, testified to Congress on the necessity of topographic maps as the basis of geologic maps because of their reliable representation of natural features, such as streams and bodies of water, valleys, hills, and mountains. **In short, it is my opinion that the purpose of USGS topographic maps, including the Base Maps was to *accurately* represent these natural features, including water.** A true and correct copy of USGS publication *Minerals, Lands, and Geology for the Common Defence and General Welfare*, V.2 (1879-1904) by M. C. Rabbitt, downloaded from the USGS in May 2022, describing USGS mapping in the late 1800s is attached as SOS 293.

6. The Base Maps were created using the explicit mapping standards of the USGS techniques and methods, which are described in *A Manual of Topographic Methods* (1893) by H. Gannett, USGS Monograph 22, which was intended as direction for experienced surveyors working on USGS topographic maps, and includes highly technical direction on astronomic measures, triangulation and surveying, traverses and field methods, geologic and hydrographic features; and cartography (then referred to as sketching). SOS 294 is a true and correct copy of Monograph 22, downloaded from the USGS website in May 2022.

7. Monograph 22 directs correct field practice, clearly showing field crews were on site and mapped physical features based upon direct observation. (SOS 294.) "The traversing should follow, in order that all the control may be furnished to the chief of party for his use in sketching [cartography]. This order, which is followed as closely as practicable, requires that the members of the party be scattered over a considerable area of country, and if they are living in camp it requires that they remain away from it a considerable part of the time, or else that a large amount of traveling be done in order to reach camp at night. Where they are not living in camp the most economical disposition is to scatter them at various places within their fields of work." (Id. at 132); "Sketching goes on coincidently with the measurement of heights" (Id. at 145); "the chief of party

should go over the ground, sketching the drainage, culture, and forms of relief" (Id. at 146); and "From a great altitude the lower details will be dwarfed and will measurably disappear, while from low points the relations, forms, and masses of the greater elevations cannot be properly seen. In such a country stations at different elevations must be selected in order to see all parts of the country to the best advantage. The extreme summits will prove of little service as sketching stations" (Id. at 145).

8. Plate 12 is properly termed as a thematic map portraying interpretative scientific field observations. The signed Letter of Transmittal published in WSP 142 serves as a modern equivalent of the purpose and scope of the field investigation, scientific interpretation and published results. (SOS 001_4) Mendenhall was focused not just on irrigation infrastructure in his study, but also on percolating waters. (Id.) **In my opinion, the USGS peer review process would have applied to Mendenhall's study** (SOS 001)**—its approval, conduct, write up, and review.**

9. Mr. Nicholls testified that Plate 12 "does not include a symbol on the legend to identify specifically what type of hydrologic feature the dashed blue line is intended to reflect . . .". (BTB-38_7:19-22.) The is readily explained by knowing the Legend for Plate 12, WSP 142 explains the symbols used specifically for the features that are part of the thematic map from Dr, Mendenhall's study and not for any features from the Base Maps. This is consistent with USGS's long-standing practice to publish topographic mapping symbols in separate brochures rather than engraving established symbols on each topographic quadrangle. SOS 296 is a true and correct copy USGS Circular 1341, *History of the Topographic Branch (Division)* (2009) downloaded from the USGS website. **It is my opinion, based upon my viewing of tens of thousands of historical USGS maps, that the symbols for perennial and intermittent streams have stayed the same for the approximately 140 years, since the first USGS topographic maps were released, and the upper reaches of Strawberry Creek are therefore accurately portrayed on the 1901 Redlands quadrangle as they were observed in 1898/99** (SOS 291)**, which were relatively dry years** (SOS 001_019)**.**

10. I asked Ms. Doughty's office to inquire at the U.S. Board on Geographic Names ("USBGN") regarding Strawberry Creek. SOS 298 is a true and correct copy of correspondence

she sent to me, which I believe to be genuine. Ms. Runyon, of the USBGN wrote that Strawberry Creek "was first labelled on U. S. Geological Survey topographic maps in 1899 so we presume it was found in local use when the surveys for that map were conducted. Unfortunately, the field notes for those early maps were discarded many years ago, although it was never required that the surveyors record the history of the names they collected; they were instructed to simply verify the name, spelling, and location" SOS 298. The USBGN has since 1890 been the official, authoritative listing of places names for the United States. **This written communication, which in my opinion is credible and consistent with USBGN practice, serves as a second source affirming the existence and location of Strawberry Creek.**

11. **Based upon my understanding of historical mapping technique and reliability, it is my opinion that the methods used to create USGS topographic maps in the late 19th Century, including the Base Maps were sophisticated and accurate, and that Dr. Mendenhall would not have used "imprecise" base maps lacking "attention to detail" as Mr. Nicholls testified**.

12. Mr. Nicholls alleges Plate 12 (including the Base Maps) was "created prior to the development of photogrammetric mapping practices used to create subsequent topographic maps which more precisely depict topographic features." (BTB-38_2, n.3) While photogrammetry did improve the efficiency of topographic mapping, this does not minimize or negate the quality of previous topographic maps, as Mr. Nicholls suggests, nor are there any fundamental "differences in mapping objectives" between modern and 1880s USGS topographic maps. The practices have changed but the adherence to current standards of map accuracy also remain true for all eras of USGS topographic maps. Photogrammetric mapping practices have constraints that are different from earlier eras. For example, the distance from the feature mapped is greater, mapping can only be done accurately during leaf-off seasons so riparian vegetation is not as apparent to the observer, and shadows can present challenges in mountainous terrain, like Strawberry Canyon.

13. Georeferencing relies on a model relating known image coordinates on the paper map to known latitude/longitude coordinates. The goal is simply to maintain whatever accuracy exists in the original map and make it usable in a GIS. Scanned maps are georeferenced to the original map

datum.[1] Georeferencing, selecting the exact center of known control points, is important. Longitude/latitude intersections are the points on all maps that fit this criterion, since they are static and evenly distributed across the map so that mathematical model remains with evenly distributed control points. SOS 299 is a true and correct copy of a paper I, with others, authored describing in greater detail the process of accurately georeferencing historical maps.

14. Mr. Nicholls' describes "methodology for the comparison of hydrologic features" across several different generations of maps. (BTB-38_3). His approach is unclear and possibly problematic. Specifically: (1) it is presumed the PDF Mr. Nicholls' started with is a raster image but the resolution is not stated; (2) the PDF was imported into a GIS so it may be presumed it is technically a GeoPDF, but that is not known; (3) Mr. Nicholls does not indicate which features were used as common reference points across maps. For example, Plate 12 has 28 well defined latitude and longitude points. If these were used, a high degree of transformation would be possible. But instead, Mr. Nicholls appears to have relied upon commonly identified geographic features (river intersections or other landmarks), despite the availability of longitude and latitude intersection points, and so a low precision of transformation is a major concern. The result is that in BTB-38_7:7-9, Mr. Nicholls declares the misplacement of stream location versus topography of 150 feet (which I presumed to mean vertically). It is also possible that Mr. Nicolls failed to account or compensate for different datums between the different eras of maps. Further, because Mr. Nicholls resized the map, any georeferencing error would be magnified. **It is my opinion that Mr. Nicholls' conclusions based upon his georeferencing exercise, as described, are unreliable.**

15. In BTB-28_8:20 Nicholls testifies that "the degree of imprecision in the topography depicted on the 1905 hydrologic map renders it impossible to reliably determine the proximity . . .". However, when I reviewed the 1901 topographic quadrangles, Strawberry Creek is correctly located and lines up correctly with the topographic contours. SOS 091, SOS 290, SOS 291. **It is my opinion that the misalignment on Plate 12 is a result of misaligned printing plates.** The

[1] Datum is defined in, SOS 300_270, which is a true and correct copy of USGS publication *Maps for America*, which was downloaded from the USGS website: In surveying, a reference system for computing or correlating the results of surveys. There are two principal types of datums: vertical and horizontal.

historical printing process is described in SOS 297_007, which is a true and correct copy of Methods of Geologic Cartography in use by the United States Geological Survey, by J.W. Powell and W.J. McGee, presented at the International Geologic Conference in Berlin in 1885, which was printed in 1888 and downloaded from the USGS Website in May 2022.

I swear under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed on this 16th day of May 2022, at Madison, Wisconsin.

By: Gregory J Allhoff